REMARKS/ARGUMENTS

Applicants amended claim 13 to recite "said receive group" rather than "said *first* receive group" because "*first* receive group" lacked antecedent basis. Applicants amended claim 15 to improve its form. Lastly, applicants added new claim 24 to further protect applicants' invention.

The Examiner rejected priorly presented claims 1-23 as unpatentable, 35 USC 103(a), over Ishii et al., patent 6,434,132, August 13, 2002 (hereinafter Ishii) in view of Monch et al., patent 6,304,745, October 16, 2001 (hereinafter Monch). Applicants respectfully disagree because Ishii and Monch, alone or in combination, fail to teach or suggest establishing reliable communications between two points through mobile wireless nodes at the first point dynamically forming a receive group in response to receiving a probe from the second point and the receive group, under the control of a controlling node, subsequently transmitting/receiving signals to/from the second point.

More specifically, applicants' invention is directed at enabling reliable communications between mobile wireless nodes at different points in a network. In accordance with applicants' invention, when mobile wireless nodes detect transmission problems over a propagation environment, they dynamically form groups and act together to simultaneously receive and transmit data over the propagation environment, the combined effort thereby providing reliable communications. (Specification, page 5, lines 29-32; page 6, lines 19-27). In particular, in accordance with applicants' invention, mobile nodes will periodically broadcast discovery probes to determine nearby neighboring nodes to which they can reliably communicate and from this probing, each will create and maintain a neighboring node list. Subsequently, before a wireless node at a first point sends data over a particular propagation environment to a second point, it will broadcast an alert probe to the wireless nodes at the second point. If none of the wireless nodes at the second point are able to receive the alert probe error free, they will each use their neighboring node list to communicate with other nodes at the second point to dynamically negotiate the formation of a group. The resulting group of nodes will then choose a controlling node. For all data the wireless node at the first point subsequently sends to the second point, the group of nodes at the second point will each receive the data and will each forward this data to the controlling node, which will then combine this data in order to reliably receive the data at the second point. (Specification, page 8, lines 3-31; page 9, line 24 to page 12, line 13). Similarly, when subsequently

transmitting data from the second point back to the first, the controlling node will pass the data to the group of nodes, which will then jointly transmit the data to the wireless node at the first point to reliably transmit the data. (Specification, page 12, lines 7-21).

Independent claims 1 and 18 and amended independent claim 13 recite applicants' invention as described above and most significantly, recite a method for establishing reliable communications between first and second points wherein a set of wireless nodes at the second point each creates a neighbor list. In reaction to receiving a probe, one or more of these nodes at the second point then forms a receive group based on the neighbor lists and chooses a controlling node from the group. The group, under the control of the controlling node, then receives subsequent signals transmitted by a node at the first point. The Examiner indicates that other than the creation of neighbor lists, Ishii teaches applicants' invention as recited by claims 1, 13 , and 18. Applicants respectfully disagree because Ishii fails to teach or suggest reliable communications through wireless nodes forming groups in order to receive transmitted signals.

Ishii is concerned with an environment comprising multiple wireless subnetworks, each subnetwork including a parent host/base host and multiple mobile hosts that communicate with their corresponding parent host through an assigned wireless channel. Ishii is directed at the channel assignment within a subnetwork interfering with the channel assignment of an adjacent subnetwork and with mobile hosts having to change channel assignments as they move between subnetworks. Ishii teaches that a parent host and the mobile hosts of a subnetwork monitor for channel assignment interference from adjacent subnetworks. When the parent host or a mobile host detects an interference, either the parent host of the interfered with subnetwork or the parent host of the interfering subnetwork will change its channel assignment in order to remove the interference. Ishii further teaches that a mobile host will monitor its movement between subnetworks and when the mobile host makes such a movement, it will change its channel assignment to that of the new subnetwork. (Ishii, column 1, lines 17-39; column 2, lines 51-67; column 3, line 41 to column 5, line 9). Accordingly, Ishii establishes reliable communications between two points by changing wireless channel assignments, which is completely divergent from applicants' invention as recited by claims 1, 13 and 18 of establishing reliable communications by wireless nodes dynamically forming groups to collectively receive signals under the control of a controlling node.

More specifically, the Examiner indicates that Ishii teaches in the abstract, in column 3, lines 41-65, and in column 4, lines 10-53 a parent host, such as "1a", transmitting a probe/control packet to mobile nodes, such as "2a" and "2b", and these mobile nodes then forming a receive group in reaction to receiving the probe, as claim 1 and similarly claims 13 and 18 recite. Applicants respectfully disagree. In these references, Ishii teaches that a parent host will broadcast control packets to the mobile hosts of its subnetwork (e.g., 1a will broadcast control packets to 2a and 2b). At times, these control packets may cross into adjacent subnetworks, indicating the presence of interference. Ishii teaches that a mobile host will monitor these control packets and if it receives a control packet from its current parent host (e.g., if 2a receives a control packet from 1a) the mobile host will determine if the packet is a "parent indication packet", where the parent host is simply announcing its presence to the mobile hosts, or if the packet is a "channel assignment command", where the parent host is indicating that it has detected channel interference and is instructing the mobile host to "select a new channel" as set forth in the command. (Ishii, column 3, line 66 to column 4, line 10). Similarly, Ishii teaches that if a mobile host receives a control packet from the parent host of an adjacent subnetwork, the mobile host has detected a channel interference. In this case, the mobile host either instructs its current parent host or the parent host of the interfering adjacent subnetwork to select a new channel. If this is not successful, the mobile host determines it has lost communications with a parent host and searches for the channel assignment of its current subnetwork. (Ishii, column 4, lines 11-32). Ishii further teaches in the above references that a mobile host may also receive a control packet from other mobile hosts, again indicating a possible channel interference. Again, the mobile host will either cause the mobile host creating the channel interference to instruct its parent host to select a new channel or if not successful, search for the channel assignment of its current subnetwork. (Ishii, column 4, lines 33-67). As can be seen, Ishii teaches methods whereby parent and mobile hosts use control packets to detect and inform one another about interference from adjacent subnetworks; however, at no time does Ishii teach or suggest mobile wireless nodes receiving a transmitted probe and forming a receive group in reaction to receiving such a probe, as claim 1 and similarly claims 13 and 18 recite.

The Examiner further indicates that in Figure 5 and column 5, lines 10-42 Ishii teaches choosing a controlling node from among the receive group and the receive group, under the control of the controlling node, receiving subsequent signals from a first node. Again, applicants respectfully disagree. Here, Ishii teaches that when a mobile host detects a channel interference, it will notify its corresponding parent host, causing this parent host to

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select a new channel assignment for the subnetwork and to broadcast this new channel assignment to the mobile hosts of the subnetwork. Ishii also teaches in this reference that the parent host of one subnetwork may notify the parent host of an adjacent subnetwork of an interfering channel assignment, causing the parent host of the interfering subnetwork to select a new channel assignment and to broadcast this new channel assignment to the mobile hosts of its subnetwork. Again, in this reference Ishii teaches how a parent host detects channel interferences and reconfigures the subnetwork to overcome the interferences. As such, Ishii fails to teach or suggest a controlling node being chosen from among a receive group and a receive group, under the control of a controlling node, then receiving subsequent signals, as claims 1, 13, and 18 recite.

The Examiner further indicates that Monch teaches the step of mobile nodes creating neighbor lists. Monch is directed at methods for a calling radio station to create a radio chain of radio links between itself and a called radio station. According to Monch, the radio stations in a network each maintains a list of stations to which it has a direct radio link. A calling radio station needing to reach a called radio station combines these lists to create a single list of radio links between radio stations. It then uses this combined list of radio links to determine a set of possible radio chains to the called radio station and then selects one of these chains. (Monch, column 1, line 60 to column 2, line 25; column 3, line 7 to column 4, line 51). Monch arguably teaches mobile nodes creating neighbor lists. However, Monch fails to teach or suggest the remaining limitations of applicants' invention as recited by claims 1, 13 and 18 including a set of wireless nodes forming a receive group in reaction to receiving a transmitted probe, choosing a controlling node from the receive group, and the receive group, under the control of the controlling node, receiving subsequent transmitted signals. Accordingly, because neither Ishii nor Monch, alone or in combination, teaches or suggests applicants' invention as recited by claims 1, 13, and 18, these claims are novel and nonobvious in view of Ishii and Monch.

Similar to claims 1, 13, and 18, claim 19 recites a method for establishing reliable communications wherein a group, consisting of a controlling wireless subset and other wireless subsets, is formed in order to receive and transmit data between an originating subset and a second point, which limitations Ishii and Monch fail to teach or suggest as described above. The Examiner further indicates that Ishii teaches in column 3, line 41 to column 4 line 53 the step of claim 19 of each member of the group forwarding to the controlling node all messages received from the originating subset and destined for the second point. Applicants

respectfully disagree because as described above, in this reference Ishii only teaches how parent and mobile hosts use control packets to detect and inform one another about interference from adjacent subnetworks. At no time does Ishii teach or suggest group of subsets each forwarding to a controlling node all messages received from an originating subset in order to establish reliable communications between two points. Accordingly, claim 19 is novel and nonobvious in view of Ishii and Monch.

Claims 2-12, 14-16, and 20-23 depend from claims 1, 13, and 19 and are therefore novel and nonobvious in view of Ishii and Monch for the same reasons as set forth above.

Claim 17 recites a method for operating a mobile wireless network wherein a set of nodes at a first point dynamically form a first group with a first controlling node and a set of nodes at a second point dynamically form a second group at a second point with a second controlling node. The first controlling node reliably passes data to the second controlling node by first passing a representation of the data to each member of the first group. Each member of the first group then transmits the data to the second point, with each member of the second group receiving the data and passing representations of the received data to the second controlling node. The second controlling node then combines the received representations of the data to create a reliable signal.

Overall, Ishii and Monch fail to teach or suggest reliably passing data between two points through dynamically formed groups, as describe above. More specifically, the Examiner indicates that Ishii in column 2, line 51 to column 3, line 32 teaches the steps of a controlling node of the first group passing a representation of the data to each member of the first group and each first group member then transmitting the data to the second point. Applicants respectfully disagree. In this reference, Ishii indicates that a parent host may recognize its subnetwork is being interfered with by another subnetwork, or alternatively, a mobile host may recognize this interference and notify its parent host. In either case, the parent host will change the channel assignment for the subnetwork and broadcast the new assignment to the mobile hosts of its subnetwork so that they will switch to the new channel and thereby remove the interference. Alternatively, Ishii teaches that the parent host may not broadcast the new channel assignment after the change. In this case, the mobile hosts will detect the loss of contact with the parent host and search the frequency spectrum for the new assignment. Accordingly, in this reference Ishii teaches methods for detecting and resolving

channel interference; however, Ishii fails to teach or suggest a group of nodes collectively transmitting data on behalf of a controlling node to a second point, as claim 17 recites.

The Examiner further indicates that Monch teaches in column 4, line 53 to column 5, line 18 each member of the second group receiving the transmitted data from the first group and each member then passing a representation of the received data to the controlling node of the second group, which then combines these representations to create a reliable signal. Again, applicants respectfully disagree. In this reference, Monch teaches that each radio station in a network will maintain a list of neighboring stations to which it has radio links. When a calling radio station needs to establish a connection to called radio station, it will combine the lists from other stations to create one large list and will then search this list to determine a set of radio stations it can use to reach the called radio station in a chain-like fashion. Again, a calling radio station gathering and combining individual lists to create one large list of radio links between stations is not the same as a group of nodes each receiving data transmitted by a first group and then each node passing its received representation of the data to a controlling node that then combines the representations to create a reliable signal. Accordingly, Ishii and Monch fail to teach or suggest claim 17.

New claim 24, recites in part, a method performed by a wireless node for establishing reliable communications between first and second points where the wireless node is at the second point. The wireless node, in response to receiving a probe, communicates with one or more of other wireless nodes to form a receive group, communicates with members of the receive group to choose a controlling node from among the receive group, and upon receiving subsequent transmitted signals from a first point, forwards the signals to the controlling node. As described above with respect to claim 1, Ishii and Monch fail to teach or suggest, alone or in combination, a node forming a group in response to receiving a probe and then as part of this group, forwarding subsequent received signals to a controlling node. Accordingly, claim 24 is novel and nonobvious in view of Ishii and Monch.

Since Ishii and Monch do not teach or suggest applicants' novel methods alone or in combination as set forth in claims 1-12 and 17-23, amended claims 13-16, and newly added claim 24, applicants submit that these claims are clearly allowable. Favorable reconsideration and allowance of these claims are therefore requested.

Applicants earnestly believe that this application is now in condition to be passed to issue, and such action is also respectfully requested. However, if the Examiner deems it would in any way facilitate the prosecution of this application, he is invited to telephone applicants' agent at the number given below.

Respectfully submitted,

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